

The Maryland Fruit Grower



January, 1933



Maryland State
Horticultural Society



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Published Monthly By
The Maryland State Horticultural Society
A. F. VIERHELLER, Editor

Vol. 3

January, 1933

No. 1

INJURIES TO APPLE LEAVES AND FRUIT CAUSED BY SPRAY MATERIALS

(Continued from November, 1932 issue)

Arsenical Injury ("Yellow Leaf" Injury)

"Yellow leaf" injury, as a result of the pre-blossom or petal-fall applications has not been important but it does sometimes develop as a result of these applications. In such cases, the yellow leaves may not appear for several weeks. It may be noticeable after the two-weeks application and is more noticeable with succeeding applications of lead arsenate with lime-sulphur.

Yellow leaves may appear within a week or ten days after an application but sometimes they are not noticeable until a longer period has elapsed. After the first appearance, other leaves may turn yellow over a brief period of one to two weeks or they may be in evidence almost continuously for several weeks. Leaves drop soon after turning yellow. The appearance of yellowing "creeps up" on the leaves, appearing first on the small, basal leaves, then on the larger leaves. This order, however, is not without exception. There are marked differences in susceptibility of varieties to this injury.

Arsenical Injury to Fruit—Russetting

Russetting, as used here, refers to an injury to the skin of the apple, in which the epidermal cells or portions of the surface are killed and a later formation of cork gives the characteristic russeted appearance. It may consist of light or heavy netting or may completely cover small or large areas. The exact cause of russetting on apples is frequently difficult, if not impossible, to establish. Frost and other unfavorable weather conditions are often responsible and in many instances these natural injuries are believed to have been caused by spraying materials. However, spraying materials are often responsible for all or part of the russetting found on a given lot of apples. As indicated in a preceding paragraph, lime-sulphur, as such, is believed to be unimportant in the development of russetting; but, where lime-sulphur and lead arsenate are combined, russetting as a result of arsenical injury often develops. It has been observed also where lead arsenate has been used with other sulphur preparations.

Blossom-End Injury

Arsenicals are responsible for another form of injury to the fruit. This occurs around the calyx and is called "blossom-end" injury. The cause of

this injury has been a mystery but recent work has indicated definitely that soluble arsenic is responsible. It appears as a dark brown or nearly black area around the calyx of the apple. The area may be confined closely to the calyx or may cover the entire basin. A fungus, probably black-rot in most cases, invades the injured areas; and, because of this, black-rot has, in some instances, been wrongly blamed as the real cause of this trouble. The rot sometimes spreads beyond the blossom-end of the apple.

Tree-Vigor

Trees of high vigor have shown less yellow-leaf and blossom-end injury than trees of low vigor. Burning of the foliage by lime-sulphur early in the season is believed to favor arsenical injury later. Lime reduces russetting and possibly blossom-end injury. Iron sulphate slows down the development of most forms of arsenical injury following the use of lead arsenate with lime-sulphur.

Bordeaux Injury—Injury to Foliage

Injury to foliage from the copper in Bordeaux has the same general symptoms as yellow-leaf arsenical injury. The first visible stage of copper injury is purple spots, which usually turn brown as the tissues die. With properly made Bordeaux, these spots are usually small and may be on either the upper or lower surface of the leaf.

These brown spots may be the final stage of injury, in which case, affected leaves do not fall prematurely, but, in many cases, the leaves yellow and drop prematurely. The brown spots may usually be found in any year if Bordeaux has been used in the early summer applications. Large numbers of yellow leaves usually appear only after periods of high humidity and relatively high temperature. In other words, "muggy" weather is favorable to this injury. Yellow leaves may appear soon after an application, but their appearance may be delayed for several weeks until weather conditions become conducive. The concentration of the Bordeaux and the rate of application have not been observed to be significant factors in affecting the development of the yellow leaf type of copper injury. There have not been significant differences in the numbers of yellow leaves from light and heavy applications of either weak or strong Bordeaux.

Injury to Fruit

Injury to the fruit is a form of russetting which is very similar to that caused by arsenicals with lime-sulphur and also resembles some types of frost injury. Russetting from Bordeaux, however, is usually much more severe than from lime-sulphur and lead arsenate. Injury to the fruit is a serious limiting factor in the use of Bordeaux on apples. It may result from any of the early season applications of Bordeaux. The greatest amount of russetting probably occurs from the petal-fall application, but it may likewise be severe from the two-weeks application.

There is much difference of opinion about the relation of excess lime in Bordeaux to russetting, but there is no evidence from this work that an excess of lime in Bordeaux reduces russetting in Michigan. The rate of application and the concentration of the Bordeaux are important. Both heavy application and high concentration favor injury and the actual amount of copper applied is apparently the real determining factor, since equal amounts of copper, no matter how applied, produce about the same amount of russet-

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ing. Varieties differ widely in their russetting from Bordeaux.

The combinations of materials most commonly used may cause injury. Safer combinations, that are effective, are being sought. Much injury may be avoided, however, by the exercise of good judgment on the part of the grower to adapt the generally recommended spraying treatments to fit local, varietal, and seasonal conditions. The number of applications, the rate of application, and the concentrations of materials may sometimes be varied to advantage and other materials even may be substituted. Much injury may be avoided by not spraying when conditions are favorable for the development of injury and by not overspraying.

(From Tennessee Horticulture, June, July, August, 1932, Tennessee State Horticultural Society, Knoxville, Tennessee.)

* * *

A GOOD MEETING

The Thirty-fifth Annual Meeting of the Society was outstanding. The speakers, several of whom were fruit growers, gave excellent and practical talks on such topics as orchard economics, profitable peach production, orchard diagnosis, reducing of orchard costs, common versus cold storage at the orchard, insect control, drought injury, and a real discussion of individual serious orchard problems and how they had been met or were to be met by the growers. A very good movie on bee life was shown.

The dinner was an enjoyable affair, and the general subject of international trade, and the recent favorable results in opening the Argentine market to more American apples was ably discussed by experienced speakers.

A fine commercial exhibit was held, consisting of spray materials, fertilizers, lime, nursery stock, packing materials, orchard tillage machinery and tractors, spray machines and grading and washing machines.

Another new feature was an educational exhibit staged by the various members of the departments of pathology, entomology and horticulture, where by use of living materials, demonstrations and exhibits showed the insect problems, disease control, propagation, pruning, diagnosis of fruit spurs and growth and exhibits of various other things of practical interest to every fruit grower.

The horticultural students staged a fruit show, using apples from all over the country. This fruit had been used to train a fruit judging team last fall. This team competing with teams from six other colleges, took third place and one Maryland student placed second in individual scoring.

Still another new feature of the meetings was the demonstrations, in fruit grading, packing fruit for foreign shipment, and the freezing of peaches and strawberries for the fresh fruit market outlet. You should have seen some of the actual packages of apples that were supposed to be good, or some of the fruit taken from export shipments, or you should have tasted those fine frozen strawberries and sliced peaches.

And did you hear those talks on the railroad situation and the Federal Reserve rediscount of agricultural paper?

Well, we're sorry that you missed the meetings. The crowd was not any too large, but the interest was really high. Plan to be there next year for sure. This is a fruit growers' society, and the programs are very carefully planned to help the grower in solving his many problems.

BORDEAUX OIL PAINT

For several years there has been considerable discussion relative to the efficiency of Bordeaux oil paint as compared to wound dressings commonly used, such as white lead and oil. Large cuts on both peach and apple trees unquestionably should be given some sort of protection as soon as they are dried out. Mr. Pierce of the Vincennes Station has identified 12 or 14 different species of wood rot fungi which have entered mostly through open cuts or winter injured areas on peach trees in Knox County. Painting the wounds will not entirely prevent these organisms gaining entrance to the inner wood of the tree but is a distinct preventative. The Bordeaux oil combination is a fungicide as well as a wound coating and should be more desirable than white lead and oil for that reason. In addition, the Bordeaux oil, when properly made, leaves an elastic covering over the wood which prevents it from cracking and is more lasting than most other paints.

In the spring of 1930 the large cuts on two rows of peach trees at the Purdue Farm at Bedford were painted with ordinary heavy white lead and oil paint. On the rest of the orchard Bordeaux oil paint was used. After two years the Bordeaux oil cuts are showing a much better covering and less cracking and checking than the white lead and oil rows.

This paint is not expensive and is made as follows: 1 pound powdered Bordeaux (without lead) is mixed with enough raw linseed oil to make a consistency like white lead paint.

It should be mixed up a day previous to using and only the wound should be painted.—Hoosier Horticulture, October, 1932.

*PRUNE, GROWER, PRUNE*

Carroll Miller, Secretary of the West Virginia Horticultural Society, gives a short story of pruning in the January, 1933, "Mountaineer Grower". Remember the old poem, "Woodman, spare that tree"? Well, listen to this:

Grower, prune that tree! Spare not a single bough
That rubs against another limb! Climb up, and prune it, now!

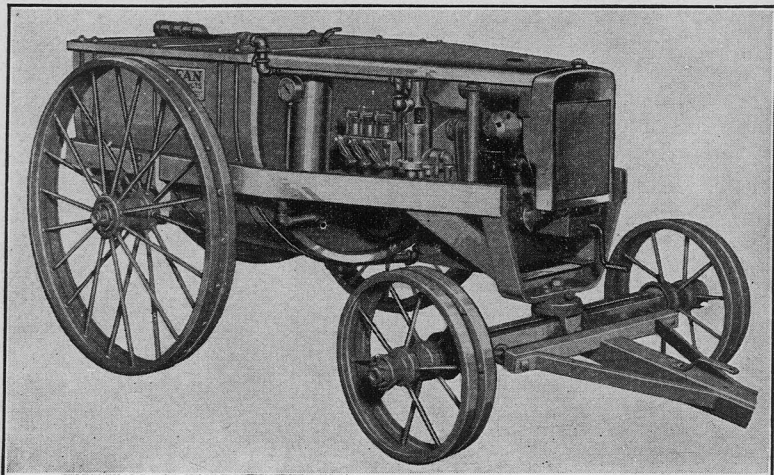
Cut off those lower limbs; the ones that drag the ground
Loading themselves with sickly fruit, not worth a cent a pound.

Cut out those water-sprouts! Lop dead stuff as you toil,
Saw out the blister-cankered limbs, and paint the cuts with oil.

Cut out those bushy twigs! Let sunlight in the tree,
An apple can't work in darkness, any more than you or me.

Grower, prune that tree! Prune—for next year's crop!
Saw for color! Cut for size! Prune from bottom to top!

A New Line of ROYAL SPRAYERS



By BEAN

In this line of Bean "ROYAL" sprayers and pumps offered this year there are many advancements and new designs never before associated with spray pump construction.

New and lighter metals, new types of bearings, new valves, new pressure regulator, added efficiency, longer life and greater economy in spraying.

Growers this year are primarily interested in producing a maximum clean crop, but at the same time reducing the cost of producing this crop, and this new line of Bean "ROYAL" Sprayers or any of our Standard Sprayers will help to do so.

Our new Catalog is ready and you will want your copy.

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MARYLAND'S PRINCIPAL COMMERCIAL VARIETIES OF APPLES

The commercial production of apples in Maryland is approximately 55 per cent of the total production and is limited to a comparatively few varieties. According to statistics based upon figures of 1928, the commercial planting is as follows:

Stayman Winsap	22.0%
York Imperial	15.3%
Grimes Golden	9.4%
Transparent	5.8%
Delicious	4.5%
Jonathan	4.0%
Ben Davis	4.0%
Black Twig	3.8%
Winesap	2.8%
Rome Beauty	2.2%

From figures obtained in connection with inspection and certification of apples during the past season it appears that York Imperial and Stayman are the two most important varieties being closely followed by Grimes, Jonathan, and Transparent. Ben Davis, Delicious, and Black Twig seem to be next in order of importance closely followed by Winesap, Stark, Rome, Williams and Duchess.—Md. Market News Letter, Jan. 1933.

* * *

PASTE THIS IN YOUR HAT

Here's more information regarding improved quality and better production methods. It comes from January, 1933, "Hoosier Horticulture" published by the Indiana Horticultural Society:

"An orchardist hadn't done a very good job of spraying the past season and he had plenty of worms and scab, but by putting the pretty red cheeked apples on top the basket he fooled the buyer. A few of the larger apples on top also improved the bottom contents and the apples sold. His "Bens" were disposed of to innocent housewives by a different name. The remainder of his cull apples had been thrown on the market as such but he still had many bushels to sell. The people who bought early from him didn't come back for more apples, his commission man was indifferent every time he went in his store, even the women on his retail route didn't need any apples.

"He made several New Year's resolutions and lest he forget them he wrote down the following:

1. To do a good job of pruning because it helps to color and size apples.
2. To spray thoroughly as it's the only known means of controlling insects and diseases.
3. To grade my fruit because it aids in packing, also instills confidence in the buyer.
4. To do a better job of packing than my neighbor because a neat, well-filled basket creates a demand.
5. To leave all cull apples at home because there are always plenty of good apples on the markets. Culls set the price on the better grades of fruit.

AN EXCELLENT RECORD

Shipping point inspection of apples in Maryland is not merely a certification of the packed and loaded product, but a service designed to assist grower and shipper in grading and packing his product so as to bring the greatest net return from the market. During the past three years the service has been administered primarily with this end in view with the result that the number of cars failing to grade as marked has decreased materially.

Through the cooperation of growers, shippers, and inspectors, 94.6 per cent of the apples inspected in western Maryland last year graded U. S. No. 1 or better; and 5.4 per cent U. S. No. 2 or Utility. No cars failed to grade as marked.

The grade defects found in all cars inspected averaged 3.3 per cent which is but a fraction more than one-half the percentage of defects allowed in the tolerance. This is an average of 2 per cent less grade defects than in any previous year. Export form certificates were issued on 74.8 per cent of the total cars inspected.—Md. Market News Letter, Jan. 1933.

* * *

BY THE WAY—

Have you read the advertisements in this issue?

Have you paid your 1933 membership? The Annual Report is sent only to paid-up members. The membership year begins January 1. Right now send your dollar to A. F. Vierheller, Secretary-Treasurer, College Park, Maryland.

* * *

SOME BULLETINS

Among the bulletins that have been published during the year are the following:

"Effect of Height of Pruning on Size of Berries and Yield in the Latham Raspberry", W. G. Brierley, Bulletin 281, Univ. of Minnesota, Agricultural Experiment Station, University Farm, St. Paul, Minn.

"Comparison of Methods of Making Spray Applications", H. A. Cardinell and H. P. Gaston, Special Bulletin 220, Michigan Agricultural Experiment Station, East Lansing, Michigan.

"The Construction and Management of Air-Cooled Storages with Special Reference to Apples", Roy E. Marshall, Circular Bulletin 143, Michigan Agricultural Experiment Station, East Lansing, Michigan.

"Life History and Habits of the Plum Curculio in Delaware", H. L. Dozier, L. L. Williams and H. G. Butler, Delaware Station Bulletin 175, 1932, Newark, Del.

"Spray and Other Deposits on Fruit", L. R. Streeter, P. J. Chapman S. W. Harman and G. W. Pearce, N. Y. State Station Bulletin 611, 1932, Geneva, N. Y.

* * *

A FAIRY STORY

Lady—"Why do you have all good apples on top and terrible ones underneath?"

Huckster—"Well lady that saves you from havin' to dig all around through the basket to find the good ones."

*Hundreds of Fruit Growers have
adopted and are pleased with . . .*

The CYANAMID PLAN of Fertilizing Fruit Trees

*It involves no radical changes from the best
orchard practices.*

The Plan requires:

- 1. Growing of luxuriant cover crops when trees are young**
- 2. Use of phosphate and potash as required by the cover crops**
- 3. Plowing under or discing into soil of these cover crops**
- 4. Occasional breaking up of any permanent sod allowed to develop**
- 5. Annual use of Aero Cyanamid to supply required nitrogen and lime**



AERO CYANAMID

A Superior Fruit Fertilizer

- Supplies a high percentage of available nitrogen.**
- It sweetens the soil and destroys soil acids.**
- It holds fast to the soil and is not washed out by rains.**
- It helps free soil of weeds and disease organisms.**
- It is quick-acting and long-lasting.**

Aero Cyanamid, liberally applied in advance of planting, is also an exceptionally effective fertilizer for vegetables. In addition to supplying nitrogen and lime to feed the plants, it serves as a partial sterilizing agent, aiding in the control of nematodes, the club root of cabbage and other disease organisms. Write for special booklet.

Send for booklet on "The Cyanamid Plan of Fertilizing Fruit," including apples, cherries, citrus, grapes, peaches, pears, pecans, plums and small fruit.



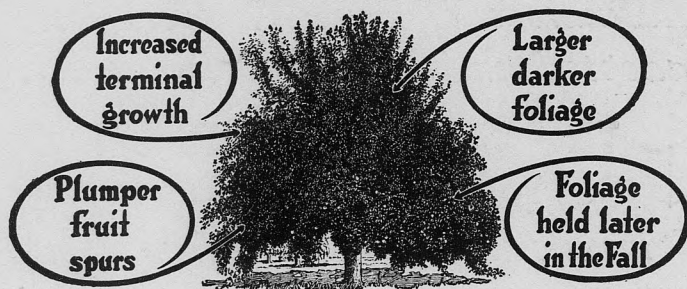
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The vigor of the young trees!
The tendency to annual crops!
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Give your trees a good, thorough spray of Scalecide—the complete dormant spray—this Fall or Winter. Your father or your grandfather never bought Scalecide as cheaply as you can today. \$23.50 for 50 gallons of Scalecide delivered.

Follow this with Scalecide 1 to 100 and Sulfocide 1 to 150 as a prepink or pink spray and you have made the first start towards rebuilding old vigor and profit into your trees. Let us send you a new spray leaflet.

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